



Dry Weather Screening Plan for Stormwater Outfalls

**Prepared by:
Utah Department of Transportation**

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1 Dry Weather Screening

1.1 Introduction

Storm water outfall screening is part of UDOT's Illicit Discharge Detection and Elimination (IDDE) Plan to identify potential illicit discharges and locate illegal connections. The objective of this activity is to eliminate sources of non-storm water discharges to the MS4 and waters of the state. The MS4 Permit requires that drainage system outfalls be screened at least once during the 5 year Permit term with at least 20% being screened each year.

Outfall screening involves identifying drainage system outfalls, performing field investigations during periods of dry weather and assessing the potential for illicit discharges. Observations of storm water flow at outlets can reveal information about the pollutant type and possible source for locating the connection and eliminating the discharge. This plan describes procedures that will be implemented to perform this activity.

1.2 Priority Areas for Outfall Screening

Review the list of outfall locations for the Region and the UPLAN map layer titled "Storm Drain Systems". The UPLAN map layer shows drainage system networks, related features, outfall locations and names of receiving waters.

Access the areas that are adjacent to the outfall locations and prioritize the outfall. Certain areas and land use types are more likely to have illicit connections to storm drainage systems to dispose of waste materials. It is important to prioritize outfall screening efforts to locate the highest risk pollutants to minimize impacts to the most sensitive areas. The categories for outfalls are:

- High Priority:
 - Outfalls to waters where UDOT is listed on a TMDL
 - Industrial areas
 - Areas with a history of illicit discharges
- Medium Priority:
 - Outfalls discharging directly to impaired water bodies (Clean Water Act Section 303d impaired water bodies)
 - Commercial areas
 - Mixed use areas – combined commercial and residential areas
- Low Priority:
 - Residential areas
 - Areas where there is no potential to connect into the storm drainage system.

Schedule visits to outfall locations by visiting high priority areas first, followed by medium and low priority areas.

2 Screening Parameters

During the outfall screening process, storm water discharges during dry conditions are evaluated and investigated for the following physical characteristics:

- Odor
- Color
- Clarity
- Floatables
- Deposits/Stains
- Adjacent Vegetation

A field data sheet will be completed for every outfall inspected. Follow-up activities will be conducted for locations where pollutants indicate possible illicit discharges. If observations indicate possible pollutant discharges, the drainage system upstream will be investigated in further detail to determine the source of the discharge. Findings will be reported to the local Health Department for action to eliminate the illicit discharge. All enforcement actions taken will be documented.

2.1 Physical Characteristics

Physical Characteristics are useful in determining potential illicit storm water discharges. The parameters described below should be investigated as part of this activity.

- *Odor* – Odor can sometimes indicate the source of contamination. Industrial discharges may result in an odor that would suggest contamination from oil, gasoline, chemicals or solvents. Industries related to food production could discharge organic substances into drainage facilities which would convey associated odors downstream.
- *Color* – Color is another indicator of illicit discharges, especially from industrial sources.

Color	Possible Source
• Brown, Gray or Black	• Industrial Sources
• Reddish-Brown	• Meat Processing
• Yellow	• Plating Mill Industries

- *Clarity* – Dry weather discharges that are cloudy may result from concrete mixing or stone related industries. In addition, sanitary wastewater can be cloudy.
- *Floatable Matter* – Illicit discharges may also have floatable matter that could indicate possible sources.

- *Deposits and Stains* – Deposits and stains can remain on surfaces after illicit discharges have ceased. However, not all deposits are the result of illicit discharges. Natural water sources that have a high degree of natural hardness may result in deposits at the flow line of pipes and at outlet structures.
- *Vegetation* - Vegetation adjacent to the outfall could be affected if the discharge is other than storm water. Plant growth may be stunted if the dry weather discharge is too acidic. Plants will continue to show effects of contamination even after the flow has ceased

3 Screening Procedures

- Plan site visits to drainage outfalls during periods of low ground water and dry weather (no precipitation in the last 72 hours).
- Ensure the outfall location is accessible; perform the inspection only if safe to do so.
- Conduct all outfall inspections with at least two staff.
- Wear appropriate personal protective equipment and safety clothing that meets UDOT standards.
- Inspect the outfall and document findings on the “Dry Weather Screening Inspection Report”
- Do not enter the drainage feature or outlet pipe unless procedures are followed for permitted confined spaces.
- If observations indicate that illicit discharges have occurred, follow the “Investigation Procedures for Illicit Discharges”.

Equipment List:
1. Outfall location map(s)
2. Inspection Report Form(s)
3. Clipboard and pencils
4. Flashlight
5. Camera
6. Personal Protective Equipment and safety clothing
7. Sample bottles and cooler (if lab testing is warranted)

4 Investigation Procedures for Illicit Discharges

If an illicit discharge is discovered, then further investigation will be necessary upstream from the outfall to determine the point of entry into the system.

1. Investigator Responsibility:
 - a. Estimate the quantity of flow observed
 - b. Take photos of the discharge and any staining, deposits, etc.
 - c. Notify the UDOT Region Safety Risk Manager:
Region 1: (801) 620-1600
Region 2: (801) 975-4900
Region 3: (801) 227-8000
Region 4: (435) 893-4799
2. UDOT Region Safety Risk Manager Responsibility:
 - a. Complete the “UDOT Spill and Illicit Discharge Detection and Elimination (IDDE) Incident Report”.
 - b. Collect samples for lab testing if this would help with source identification.
 - c. Deliver samples to UDOT Chemist for testing to determine the types of pollutants observed.
 - d. Trace the source of the illicit discharge, see Section VI titled “Storm Drainage Network Investigations”.
 - e. Based on the quantity and type of pollutants discovered, report the incident to
 - i. Local Health Department
 - ii. Utah Department of Environmental Quality, Division of Environmental Response and Remediation, 24 hour phone number: 801 536-4123.
 - f. Once source is located UDOT will issue a Notice of Violation and will work with state and local authorities to begin enforcement actions and eliminate the connection.

4.1 Storm Drain Network Investigations

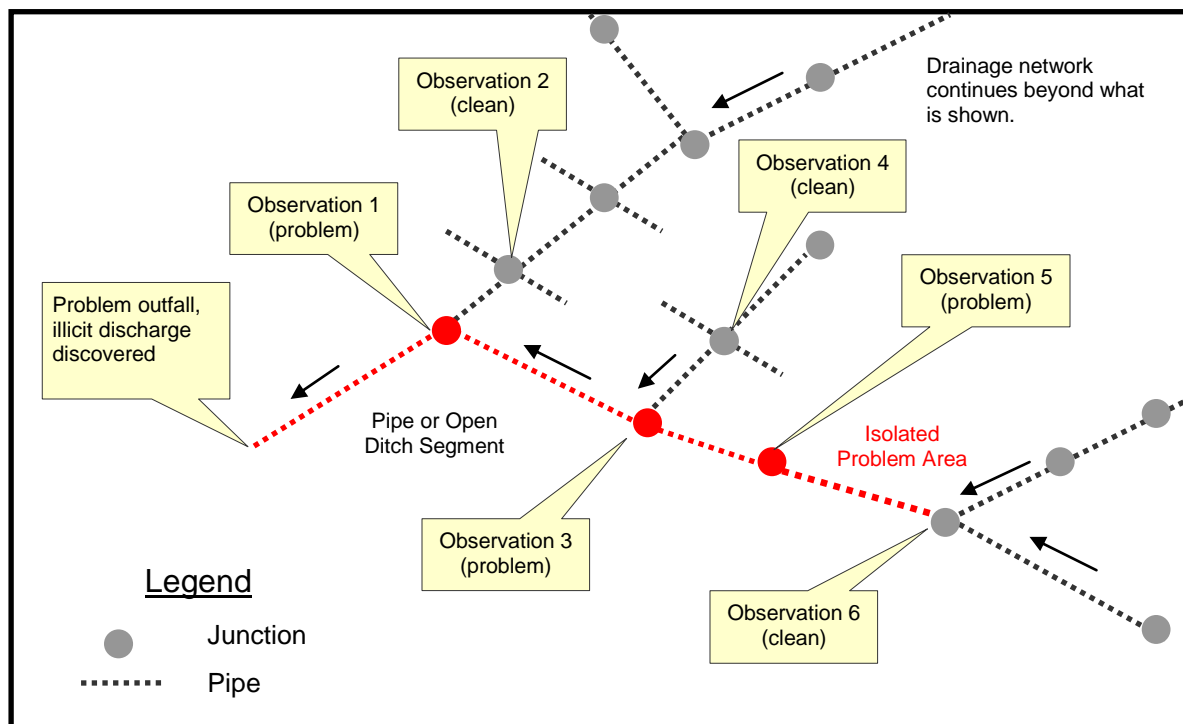
The source of some illicit connections or discharges can be located by systematically isolating the area from which the polluted discharge originates. This involves progressive investigation at junction boxes in the storm drain network to narrow down the location where the illicit discharge is entering the system. This method is best used to identify constant or frequent discharge sources such as an illicit connection into the drainage network.

Field crews should work progressively upstream from the outfall where the discharge was discovered and inspect junctions until the discharge is no longer present. Observations at junctions can be time-consuming, but they are generally a necessary step before conducting other tests. In particularly large storm drain systems, it may be helpful to first identify major branches of the system and test one junction at the downstream end of each branch. This can help to reduce the area that must be investigated. Drainage network investigations should include the following steps:

1. Review the drainage system map and identify the major branches. If a drainage system map is not available or major branches cannot be identified, then manhole observations must be done at each successive upstream manhole to map the drainage system and isolate the location of the polluted discharge entry. In such a case, field crews should also use the GPS unit to locate each observed manhole and add the location readings to the drainage system map.
2. Starting from the outfall, make observations at the next upstream manhole or junction to see if there is evidence of polluted discharge. As with the outfall inspections, field crews are looking for the presence of flow during dry weather, foul odors, colors or stained deposits, oily sheen, floatable materials, etc.
3. Repeat observations at each upstream junction until no evidence of discharge is found; the discharge source is likely located between the junction with no evidence of discharge and the next downstream junction.
4. Work downstream from the “clean” manhole or junction to isolate the location where the polluted discharge is entering the storm drain system.
5. Document all findings on the attached UDOT Spill, Illegal Connection and Illicit Discharge Incident Report

The Figure below shows the observation steps to isolate the location where an illicit discharge is entering the storm drainage network.

Storm Drain Network Observation Steps



When visual inspections are not enough to isolate the source of the illicit discharge, additional field tests can be performed, such as; Dye testing or Video Inspection Closed-circuit television (CCTV) Inspection.

Appendix A: Dry Weather Screening Inspection Report



Dry Weather Screening Inspection Report

INSPECTION INFORMATION

Inspection Date: _____ (Inspect during dry periods; 72hrs since pervious storm)

Inspector Name(s): _____

Outfall ID: _____ Region: _____ County: _____ Route: _____ Milepost: _____

Location Description: _____

Adjacent Land Use(s): ☐ Commercial ☐ Industrial ☐ Agricultural ☐ Residential

☐ Undeveloped ☐ Institutional ☐ _____

OUTFALL INFORMATION

Size (Diameter or Dimensions): _____ Material Type: _____

Condition: _____

Receiving Water: _____

Outfall Flow Present? ☐ Flowing ☐ Ponded ☐ Dry

FLOW OBSERVATIONS

Odor	Color	Clarity	Floatables
<input type="checkbox"/> None	<input type="checkbox"/> Clear	<input type="checkbox"/> Clear	<input type="checkbox"/> None
<input type="checkbox"/> Chemical	<input type="checkbox"/> White	<input type="checkbox"/> Cloudy	<input type="checkbox"/> Oily/Sheen
<input type="checkbox"/> Sewage	<input type="checkbox"/> Brown	<input type="checkbox"/> Opaque	<input type="checkbox"/> Foamy
<input type="checkbox"/> Rotten Egg	<input type="checkbox"/> Yellow	<input type="checkbox"/>	<input type="checkbox"/> Sewage
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

OUTFALL OBSERVATIONS

Deposits/Stains Inside Pipe	Adjacent Vegetation	Outlet Pool Quality	Other Observations
<input type="checkbox"/> None	<input type="checkbox"/> None	<input type="checkbox"/> None	<input type="checkbox"/>
<input type="checkbox"/> Sediment	<input type="checkbox"/> Normal	<input type="checkbox"/> Oily/Sheen	<input type="checkbox"/>
<input type="checkbox"/> Oil	<input type="checkbox"/> Excessive	<input type="checkbox"/> Foam	<input type="checkbox"/>
<input type="checkbox"/> Paint	<input type="checkbox"/> Dead	<input type="checkbox"/> Sewage	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

CONCLUSION

Likely Source of Flow: ☐ Groundwater/Natural ☐ Irrigation Water ☐ Illicit Connection

Is sampling and lab testing needed? ☐ Yes ☐ No

Is it likely that an illicit discharged occurred upstream? ☐ Yes ☐ No

If Yes, follow the "Investigation Procedures for Illicit Discharges"

Appendix B: Spill, Illegal Connection, and Illicit Discharge Incident Report



Spill, Illegal Connection, and Illicit Discharge Incident Report

INCIDENT INFORMATION

Report Date: _____ Incident Date: _____ Reported By: _____

Region: _____ County: _____ State Route: _____ Milepost: _____

Location Description: _____

Description of Incident:

Amount of Discharge (estimated): _____

INVESTIGATION INFORMATION

Date Investigation Began: _____ Was Source of Discharge Found? ☐ Yes ☐ No

Any Discharge to Storm Drain or Surface Water? ☐ Yes ☐ No

If Yes, Name of Receiving Surface Water: _____

Method(s) Used to Discover Source of Discharge:

Agencies Discharge was Reported To: _____ Date: _____

_____ Date: _____

_____ Date: _____

ILLICIT DISCHARGE REMOVAL INFORMATION

Description of Actions Taken to Remove the Discharge: _____

Has Illicit Discharge Been Remediated? ☐ Yes ☐ No Date: _____

ENFORCEMENT INFORMATION

List Enforcement Action(s) Taken

Date: _____ Enforcement Action _____

Date: _____ Enforcement Action _____